

US006674691B1

(12) United States Patent

(54) RIGID STING EXTENSION FOR OCEAN

French et al.

(10) Patent No.: US 6,674,691 B1
(45) Date of Patent: Jan. 6, 2004

(45) Date of Patent: Jan. 6, 200

(4-1)	TURBULENCE MEASUREMENT FROM AN UNMANNED UNDERWATER VEHICLE			
(75)	Inventors:	Daniel W. French. Portsmouth. RI (US); John J. Vaillancourt, Tiverton. RI (US); Edward R. Levine. Newport, RI (US); Rolf G. Lueck. Victoria (CA)		
(73)	Assignee:	The United States of America as represented by the Secretary of the Navy. Washington. DC (US)		
(*)	Notice ⁻	Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 520 days.		
(21)	Appl. No.	: 09/677,649		
(22)	Filed:	Oct. 3, 2000		
(51)	Int. Cl.7.	H04R 17/00		

(,	11.00.	
(51)	Int. Cl. 7	H04R 17/00
(52)	U.S. Cl	
(58)	Field of Search	367/131. 173,
-	367/154, 153	3; 114/20.1, 21.3; 73/861.21,
	8	61.23, 861.24; 102/402, 403

References Cited

U.S. PATENT DOCUMENTS

4.079.687 A * 3/1978	Mentcher	114/20.1
----------------------	----------	----------

4 192 246 A	•	3/1980	Hodges et al	114/20.1
			Klein	367/173
			Polvani	114/21.3
5.602.801 A		2/1997	Nussbaum et al	367/165
			Carter	367/173
			Carter	367/173

^{*} cited by examiner

Primary Examiner—lan J. Lobo (74) Attorney, Agent, or Firm—James M. Kasischke: Jean-Paul A. Nasser; Michael F. Oglo

57) ABSTRACT

The present invention relates to a system for collecting ocean turbulence data without interference from the hydrodynamic effects of the vehicle. The ocean turbulence data collection system comprises an underwater vehicle, such as an unmanned underwater vehicle, at least one sensor for collecting the ocean turbulence data, and a stinger arrangement mounted to the nose portion of the vehicle for positioning the at least one sensor sufficiently forward of the nose portion of the vehicle to avoid interference from the hydrodynamic effects of the vehicle. The collection system is also provided with at least one accelerometer for compensating for motion not induced by turbulence.

14 Claims, 2 Drawing Sheets

